In the Matter of: )
Informational Proceeding and ) Docket 03-IEP
Preparation of the 2005 Integrated )
Energy Policy Report (Energy Report))

# Committee Hearing on Scope of 2005 Integrated Energy Policy Report

Comments by Association of California Water Agencies (ACWA)

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# Issue Areas

- Drought in Southwest
- Climate Change in California
- Hydroelectric Generation In California
- Desalinization

# Drought in Southwest

- Colorado River Basin in midst of 500+ year drought, rivaling the drought that doomed the Anasazi culture. It's being called "The early 21st Century Drought"
- By next year, Lake Powell will be at minimum pool
- Impacts
  - no generation or dynamic scheduling at minimum pool
  - replacement water for California will require more pumping

# Colorado River Flows

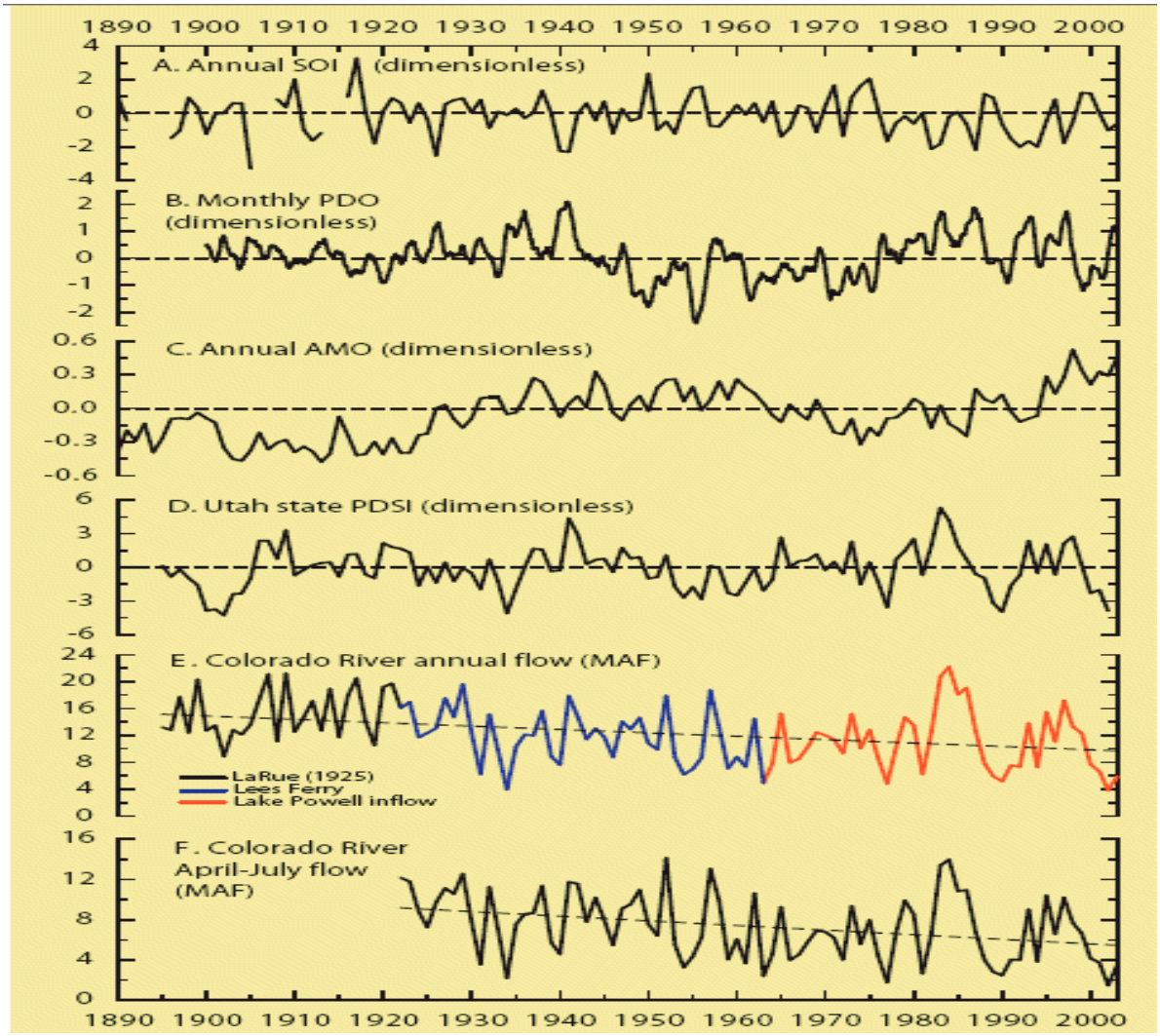


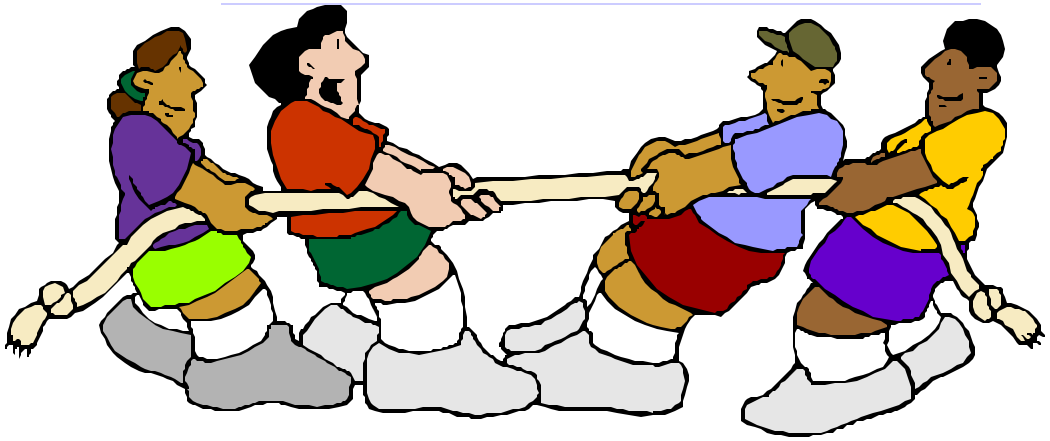

**Figure 3.** Graphs showing indices of global climate and annual flow volumes of the Colorado River from 1895 through 2003. A. Southern Oscillation Index (SOI). B. Pacific Decadal Oscillation (PDO). C. Atlantic Multdecadal Oscillation (AMO). D. Palmer Drought Severity Index (PDSI) for Utah. E. Annual flow volume. F. April-July flow volume. (A-D are dimensionless; E and F are in millions of acre-feet). **Climatic Fluctuations, Drought, and Flow of the Colorado River U.S. GEOLOGICAL SURVEY FACT SHEET 2004-3062**

# Colorado River Allocations

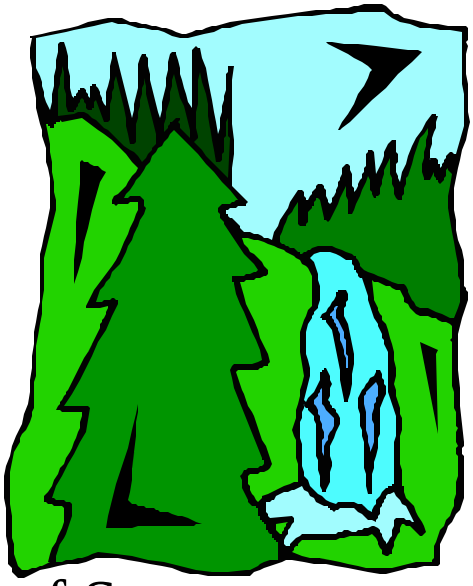
- **Allocation based upon 15 million acre-ft/year.**
- **Upper Basin States get 7.5 Million acre-ft**

- **Table 1. Predicted year-end (calendar year 2003) consumptive use in Lower Basin States**

- Nevada 0.311 million acre-feet
- Arizona 2.971 million acre-feet
- California 4.555 million acre-feet
- Subtotal 7.837 million acre-feet
- USBR unmeasured subsurface return flow from irrigated areas -0.264 million acre-feet
- Total 7.573 million acre-feet
- Source: Colorado River Board of California

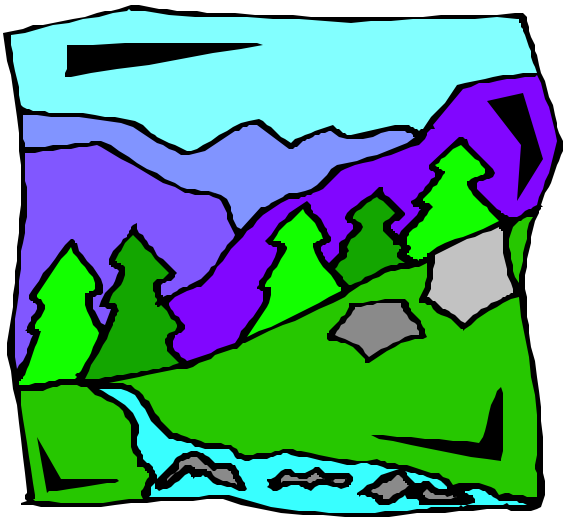


# California Water Characteristics



- 75% of rainfall occurs north of Sacramento
- 80% of use of water occurs south of Sacramento
- Mediterranean climate: 80% of the precipitation occurs from November to March. Most comes down as snow and melts through August/September.
- Majority of water use is in summer
- About 71,000,000 acre-ft of water per year is runoff
  - flows to ocean - 36%
  - environmental flows - 28%
  - agriculture - 28%
  - urban/industrial - 7%
  - other - 1%

# Climate Change In California



- In the mountains, snowpack by April 1 would diminish to nearly nothing at the lower and middle elevations, with up to a two-thirds reduction above the 9, 000-foot level. That would have a devastating impact on the state's water system, since the Sierra snowpack serves essentially as a gigantic reservoir for downstream water systems.

  August 16, Proceedings of the National Academy of Sciences

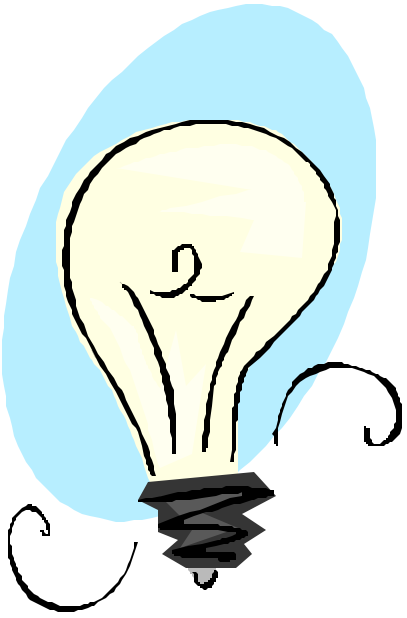
- The study also shows the snowpack could decrease by half in the next 50 years, affecting California's water supply. The snowpack acts as a reservoir, storing water during the winter and releasing it as it melts

  June 7, Geophysical Research Letters

# Impacts of Climate Change to CA Water System

- System was designed with snow as storage
  - Without snowpack we can't meet water deliveries without increased surface water storage in the north
- Impacts
  - decreased hydroelectric generation
  - increased pumping - conjunctive use ~2,000 MW of demand not seen before

# Hydroelectric Generation In California



- Most of California hydroelectric facilities will undergo FERC relicensing during the next 20 years
  - Relicensing requirements typically result in about 10% less generation than previous license
  - Repowering typically increases hydro capacity 5%
- There are hundreds of MWs of small hydro (typically conduit facilities) that have not been developed

# Desalinization in California

- **Dozens of desal plants proposed from North Coast to San Diego**
- **Desal uses a lot of electricity - new base load generation required**
- **Proposed Coastal Desalination Plants -**

- Alameda County Water District
- Cambria Community Service District
- Channel Islands Beach Community Services District
- City of Buenaventura
- City of Fort Bragg
- City of Goleta
- City of Lompoc
- City of San Luis Obispo
- Los Angeles Department of Water and Power
- Marin Municipal Water District
- Marina Coast Water District
- Mendocino County property owners
- Metropolitan Water District of Southern California
- Monterey Peninsula Water Management District
- North Coast County Water District
- Orange County Water District
- Sands of Monterey development, Sand City
- San Diego County Water Authority
- U.S. Navy, North Island Naval Air Station & 32nd Street Naval Station, San Diego